

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A mounting structure of a semiconductor device comprising:

a semiconductor chip ~~which is provided with~~ having a plurality of solder balls arranged in a grid array;

a wiring substrate ~~which is provided with~~ having a plurality of connection pads; and

an insulating sheet ~~which has~~ having a plurality of holes therethrough and leads and which is provided passing through said holes, said insulating sheet being arranged between said semiconductor chip and said wiring substrate, wherein,

~~said plurality of solder balls are electrically connected through said leads to corresponding ones of said connection pads, respectively~~

said leads connect said solder balls and said connection pads through said holes, respectively, and

an end of each of said leads is fixed on a first surface of said insulating sheet and is in contact with a corresponding one of said solder balls.

2. (currently amended) The mounting structure of a semiconductor device as claimed in claim 1,

wherein said insulating sheet has holes therethrough at positions corresponding to those of said connection pads.

3. (currently amended) The mounting structure of a semiconductor device as claimed in claim 1 ~~[[2]]~~,

~~wherein one end of each of said leads is fixed on a first surface of said insulating sheet while the other end of each of said leads is shaped to be in a floated in the corresponding one of said holes~~

wherein, a gap between said insulating sheet and said wiring substrate is filled with resin and a gap between solder balls is free of resin.

4. (canceled)

5. (currently amended) A mounting structure of a semiconductor device comprising:

a semiconductor chip which is provided with a plurality of solder balls arranged in a grid array;

a wiring substrate which is provided with a plurality of connection pads; and

an insulating sheet which has a plurality of leads and which is provided between said semiconductor chip and said wiring substrate, wherein,

said plurality of solder balls are electrically connected through said leads to corresponding ones of said connection pads, respectively,

said insulating sheet has holes therethrough at positions corresponding to those of said connection pads,

one end of each of said leads is fixed on a first surface of said insulating sheet while the other end of each of said leads is shaped to be in a floated state in the corresponding one of said holes,

the other end of each of said leads protrudes from a second surface of said insulating sheet through the corresponding one of said holes, and

~~The mounting structure of a semiconductor device as claimed in claim 4, wherein~~

each of said solder balls of said semiconductor chip is electrically connected to said fixed one end of a corresponding one of said leads.

6. (currently amended) The mounting structure of a semiconductor device as claimed in claim [[4]] 5,

wherein each of said connection pads is electrically connected to said other end of a corresponding one of said leads.

7. (currently amended) The mounting structure of a semiconductor device as claimed in claim [[4]] 5,

wherein said leads are formed of a resilient conductive material.

8. (currently amended) ~~The~~ A mounting structure of a semiconductor device ~~as claimed in claim 4,~~ comprising:

a semiconductor chip having a plurality of solder balls arranged in a grid array;

a wiring substrate having a plurality of connection pads; and

an insulating sheet having a plurality of holes therethrough and leads passing through said holes, said insulating sheet being arranged between said semiconductor chip and said wiring substrate, wherein,

said leads connect said solder balls and said connection pads through said holes, and

~~the~~ a gap between said insulating sheet and said wiring substrate is filled with resin and a gap between solder balls is free of resin.

9. (currently amended) The mounting structure of a semiconductor device as claimed in claim ~~[[4]]~~ 5,

wherein said insulating sheet is made of any one of polyimide resin, Teflon resin, epoxy resin, and alumina resin.

10-13. (canceled)

14. (currently amended) ~~The~~ An insulating sheet ~~as~~
~~elaimed in claim 13,~~ provided between a semiconductor chip and a
wiring substrate, comprising:

a plurality of holes therethrough; and

a plurality of leads, one end of each of said leads
being fixed on a first surface of said insulating sheet and the
other end of each of said leads being shaped to be afloat in said
holes,

wherein said fixed one end of each of said leads
includes a portion shaped to receive by direct contact, a
corresponding one of a plurality of solder balls of a
semiconductor chip, and said other end of each of said plurality
of leads is shaped to contact with a corresponding one of a
plurality of connection pads of a wiring substrate,

said portion being in contact with the first surface.

15-17. (canceled)

18. (currently amended) A mounting structure of a
semiconductor device, comprising:

a semiconductor chip having a chip surface with a grid
array of solder balls, the grid array being a first pattern;

a wiring substrate having a substrate surface with
connection pads in a grid array of the first pattern,

the grid array of connection pads being out of vertical
alignment with the grid array of the solder balls; and

an insulating sheet having a plurality of leads located intermediate the semiconductor chip and the wiring substrate, the plurality of leads connecting ones of the solder balls with corresponding ones of the connection pads, wherein, the leads pass through the holes; and the leads include a fixed portion in contact with the solder balls, the fixed portion also being in contact with a surface of the insulating sheet.

19. (previously presented) The structure of claim 18, wherein the grid array of the first pattern comprises at least three parallel rows of array positions.

20. (previously presented) The structure of claim 18, wherein,

the insulating sheet comprises holes;
the leads pass through the holes; and
the leads include a fixed portion in contact with the solder balls, the fixed portion also being in contact with a surface of the insulating sheet.

21. (currently amended) The structure of claim 18 [[19]], wherein the insulating sheet comprises an elongate hole corresponding to each of the parallel rows.

22. (canceled)

23. (currently amended) ~~The structure of claim 21~~

A mounting structure of a semiconductor device,
comprising:

a semiconductor chip having a chip surface with a grid
array of solder balls, the grid array being a first pattern;

a wiring substrate having a substrate surface with
connection pads in a grid array of the first pattern,

the grid array of connection pads being out of vertical
alignment with the grid array of the solder balls; and

an insulating sheet having a plurality of leads located
intermediate the semiconductor chip and the wiring substrate,

the plurality of leads connecting ones of the solder
balls with corresponding ones of the connection pads, wherein,

the elongate holes are filled with resin; and

a volume between the grid array of solder balls is free
of resin.

24. (currently amended) ~~The structure of claim 20~~

A mounting structure of a semiconductor device,
comprising:

a semiconductor chip having a chip surface with a grid
array of solder balls, the grid array being a first pattern;

a wiring substrate having a substrate surface with
connection pads in a grid array of the first pattern,

the grid array of connection pads being out of vertical
alignment with the grid array of the solder balls; and

an insulating sheet having a plurality of leads located
intermediate the semiconductor chip and the wiring substrate,
the plurality of leads connecting ones of the solder
balls with corresponding ones of the connection pads, wherein,
the ~~elongate~~ holes are filled with resin; and
a volume between the grid array of solder balls is free
of resin.

25. (previously presented) The structure of claim 18,
wherein at least some of the connection pads of the grid array of
connection pads are located within a vertical extension of a
perimeter of the semiconductor chip.